Fifth Grade Science Curriculum

5-PS1-1 Matter and Its Interactions

5-PS1-1. Develop a model to describe that matter is made of particles too small to be seen. [Clarification Statement: Examples of evidence supporting a model could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water.] [Assessment Boundary: Assessment does not include the atomic-scale mechanism of evaporation and condensation or defining the unseen particles

Literacy or Informative Text	Lab Investigations	Assessments
Why Does Matter Matter? Water/3 States of Matter Science and Literacy- pg:70-Matter Matter- The Science Penguin Forms of Matter- Delta Reader	• Balloon • Ice- Water-Antacid • Hand Sanitizer-Milk-Stone • Salt Evaporation • Disappearing H2o-Baby Diaper • Creating Oblek	• Warm Up Activities • Investigations • Scientific Method Documentation • Graphic Organizers • Lab Matrixes/written observations • Written Connection Summary • Foldables/Lab Interactive Notebooks • Performance Indicator Assessments • Teacher Observations/Student Participation

Technology:

- Science Video for Kids:States of matter by Turtle Diary
- Bill Nye the Science Guy Phases of Matter
- States of Matter by Brown Pop
- NEO k12.com/statesof matter
- How to turn Milk into Stone by Household Hocker
- How to Make Water Disappear/ Science Project by Howcast

Observable features of the student performance by the end of the grade:

1 Components of the model a Students develop a model to describe* a phenomenon that includes the idea that matter is made of particles too small to be seen. In the model, students identify the relevant components for the phenomenon, including: i. Bulk matter (macroscopic observable matter; e.g., as sugar, air, water). ii. Particles of matter that are too small to be seen.

2 Relationships a In the model, students identify and describe* relevant relationships between components, including the relationships between: i. Bulk matter and tiny particles that cannot be seen (e.g., tiny particles of matter that cannot be seen make up bulk matter). ii. The behavior of a collection of many tiny particles of matter and observable phenomena involving bulk matter (e.g., an expanding balloon, evaporating liquids, substances that dissolve in a solvent, effects of wind).

3 Connections a Students use the model to describe* how matter composed of tiny particles too small to be seen can account for observable phenomena (e.g., air inflating a basketball, ice melting into water.

5-PS1-2 Matter and Its Interactions

5- PS1-2- Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved. [Clarification Statement: Examples of reactions or changes could include phase changes, dissolving, and mixing that form new substances.] [Assessment Boundary: Assessment does not include distinguishing mass and weight.] The performance expectation above was developed using the following elements from the

Literacy or Informative Text	Lab Investigations	Assessments
Matter Can Change- Accuteach Changes in Matter-(Delta Science) Scott Foresman Text-(B24-27) (B35-37) Conservation of Matter (The Science Penguin) Science and Literacy-pg:35-Forming Solutions	• Candle • Jiffy Pop (Chemical) • Trail Mix (Mixture) • Origami (Physical) • Sugar Cube (Solution/temps) • Hair Dryer- Changes in Matter/ Conservation of • Matter- (Solid-Liquid) • Mini lava lamps- suspensions • Milk- detergent suspension • Baking soda/vinegar- chemical reactions • Bobbing raisins • Color changing paper	• Warm Up Activities • Investigations • Scientific Method Documentation • Graphic Organizers • Lab Matrixes/written observations • Written Connection Summary • Foldables/Lab Interactive Notebooks • Performance Indicator Assessments • Teacher Observations/Student Participation

Technology:

Physical/Chemical Changes of Matter (Science Post)
Characteristics of a Physical Change (Binogi)
Conservation of Mass(Crash Course Kids)
Conservation of Mass (Brain Pop)
SmokeyValley.org/Conservation of Mass
Law of Conservation of Mass Experiment (Zoo Friedland)
Elephant Toothpaste Experiment-colloid (Whizkidscience)
Physical/chemical change (BrainPop)

Observable features of the student performance by the end of the grade:

1 Students measure and graph the given quantities using standard units, including: i. The weight of substances before they are heated, cooled, or mixed. ii. The weight of substances, including any new substances produced by a reaction, after they are heated, cooled, or mixed.

2 Mathematical/computational analysis

- Students measure and/or calculate the difference between the total weight of the substances (using standard units) before and after they are heated, cooled, and/or mixed.
- Students describe* the changes in properties they observe during and/or after heating, cooling, or mixing substances.
- Students use their measurements and calculations to describe* that the total weights of the substances did not change, regardless of the reaction or changes in properties that were observed.
- Students use measurements and descriptions* of weight, as well as the assumption of consistent patterns in natural systems, to describe* evidence to address scientific questions about the conservation of the amount of matter, including the idea that the total weight of matter is conserved after heating, cooling, or mixing substances.

5-PS1-3 Matter and Its Interactions

5-PS1-3-Make observations and measurements to identify materials based on their properties. [Clarification Statement: Examples of materials to be identified could include baking soda and other powders, metals, minerals, and liquids. Examples of properties could include color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility; density is not intended as an identifiable property.] [Assessment Boundary: Assessment does not include density or distinguishing mass and weight.]

Literacy or Informative Text	Lab Investigations	Assessments
Scott Foresman Text (B28-35) Properties of Matter (Delta Science) Physical Properties of Matter(Science Penguin) Minerals, Rocks and Fossils- Delta Readers	• Penny and Glass/ Chemical Changes- Penguin Interactive • Observation of solid, liquid properties • Candle observation • Inquiry in action (American Chemical Society) • Science-class.net (properties of Matter Labs) • Density Cube Lab • Properties of Rocks and Minerals	• Warm Up Activities • Inquiry Investigations • Scientific Method Documentation • Graphic Organizers • Lab Matrixes/written observations • Written Connection Summary • Foldables/Lab Interactive notebooks • Performance Indicator Assessments • Teacher Observations/Student Participation

Technology:

Chocolate Rock Cycle
http://www.earthsciweek.org/classroom-activities/chocolate-rock-cycle

Physical Property of Matter (Study.com)
Properties of Matter (easyscienceforkids)
Property Changes (BrainPop.com)
States of Matter(Stevespanglerscience.com)
Principles of Matter (mrscience.net/matterworkbook)

Observable features of the student performance by the end of the grade:

1. Identifying the phenomenon under investigation
 A. From the given investigation plan, students identify the phenomenon under investigation, which includes the observable and measurable properties of materials.
 B. Students identify the purpose of the investigation, which includes collecting data to serve as the basis for evidence for an explanation about the idea that materials can be identified based on their observable and measurable properties.

2. Identifying the evidence to address the purpose of the investigation
 A. From the given investigation plan, students describe* the evidence from data (e.g., qualitative observations and measurements) that will be collected, including: properties of materials that can be used to identify those materials (e.g., color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility).
 B Students describe* how the observations and measurements will provide the data necessary to address the purpose of the investigation.

3. Planning the investigation
 A. From the given plan investigation plan, students describe* how the data will be collected. Examples could include:
i. Quantitative measures of properties, in standard units (e.g., grams, liters).
ii. Observations of properties such as color, conductivity, and reflectivity.
iii. Determination of conductors vs. nonconductors and magnetic vs. nonmagnetic materials.
 B Students describe* how the observations and measurements they make will allow them to identify materials based on their properties

4. Collecting the data
 A. Students collect and record data, according to the given investigation plan.

5-PS1-4 Matter and Its Interactions

PS1-4 Students who demonstrate understanding can: 5-PS1-4. Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

Literacy or Informative Text	Lab Investigations	Assessments
Scott Foresman Text pgs: 36-39 **Foldables: (The Penguin)** • Chemical Change Clues • Examples of Chemical Changes **Literacy In Science-** "Forming Solutions by Dissolving Substances in Water"	Investigating a Chemical Change (B38-B39) Various Slime Labs Magnetic Slime Fluffy Slime Oxidation Labs w/ penny, nail, staple, clip, brad,	**Warm Up Activities** **Investigations** **Scientific Method Documentation** **Graphic Organizers** **Lab Matrixes/written observations** **Written Connection Summary** **Foldables/Lab Interactive Notebooks** **Performance Indicator Assessments** **Teacher Observations/Student Participation**

Technology:

Chemical Reactions (easyscienceforkids.com)
Kids chemical reaction experiments (lovemyscience.com)
Chemical Reaction for fifth graders (Ruby barajas)
Magnetic Slime without Borax (Melissa Swigart)

DIY Fluffy Slime:How to Make the Best Slime (Gillian Bower)

Observable features of the student performance by the end of the grade:

1. Identifying the phenomenon under investigation
   A. .From the given investigation plan, students describe* the phenomenon under investigation, which includes the mixing of two or more substances.
   B. Students identify the purpose of the investigation, which includes providing evidence for whether new substances are formed by mixing two or more substances, based on the properties of the resulting substance.

2. Identifying the evidence to address the purpose of the investigation
   A. From the given investigation plan, students describe* the evidence from data that will be collected, including: i. Quantitative (e.g., weight) and qualitative properties (e.g., state of matter, color, texture, odor) of the substances to be mixed. ii. Quantitative and qualitative properties of the resulting substances.
   B. Students describe* how the collected data can serve as evidence for whether the mixing of the two or more tested substances results in one or more new substances.

3. Planning the investigation a From the given investigation plan, students describe* how the data will be collected, including:
   i. How quantitative and qualitative properties of the two or more substances to be mixed will be determined and measured.
   ii. How quantitative and qualitative properties of the substances that resulted from the mixture of the two or more substances will be determined and measured.
   iii. Number of trials for the investigation.
   iv. How variables will be controlled to ensure a fair test (e.g., the temperature at which the substances are mixed, the number of substances mixed together in each trial).

4. Collecting the data a According to the investigation plan, students collaboratively collect and record data, including data about the substances before and after mixing.